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A comparison of the quality of independent studies of students in volved in the gifted education program at selected elementary schools.

Peggy L. Eltiste
University of Nebraska at Omaha

A COMPARISON OF THE QUALITY OF INDEPENDENT STUDIES OF STUDENTS INVOLVED IN THE GIFTED EDUCATION PROGRAM AT SELECTED ELEMENTARY SCHOOLS

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Peggy L. Eltiste

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ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
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THESIS ACCEPTANCE

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Supervisory Committee

Name	Department
Blaine E Ward	Ed Admin
Roger M. Berg	TED

Helen Howell
Chairman

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Date

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CHAPTER ONE

Introduction

With the criticisms about education that have appeared in recent reports by the National Commission on Education (1983) and Goodlad (1984) there is evidence to indicate clearly that the schools and the things that we do in schools are in need of change. However, almost every major effort to reform American education has met with limited and, at best, only temporary success. Progressive education, programmed instruction, discovery learning, open education, and many other education innovations "lay battered and broken on the battlefield of educational reform" (Renzulli, 1985, p. 5).

Many specialists in the field of education of gifted students believe that excellence in education will develop through the evolutionary efforts of programming for the gifted students. These authorities contend that the excellence exhibited in programs for gifted students will become the impetus for change in regular educational programs (Clark, 1983; Betts, 1985; Renzulli, 1985).

Although programming models for gifted students differ in many ways, certain basic beliefs are inherent. It is generally accepted that gifted children are in need of special help in developing their potential (Feldhusen and Treffinger, 1980). The long range goals of these programs are to help students realize their full career potentials and to experience a sense of personal fulfillment. Those individuals who can truly be

considered gifted are those who can be the creative thinkers and leaders of the next generation. A simplistic way to state this is to help children become self-directed, highly-motivated, life-long learners (Betts, 1985 and Renzulli, 1977). Experts claimed that autonomy, ownership and responsibility for learning can be accomplished by allowing students freedom to become creative producers of information and not merely passive consumers of knowledge, as is evident in much of the regular education classes (Barbe, 1984; Betts, 1981; Gallagher, 1975, and Renzulli, 1975).

Renzulli and Reis (1985) felt that students who were allowed to investigate self-selected topics of interest would develop ownership and responsibility for learning. They contended that a schoolwide enrichment team, to organize enrichment experiences and develop mentor relationships, is a key component in the success of these investigations. However, no studies have been published to support or reject their claims. It appears that studies are needed to determine the effect of organized enrichment on the quality of independent investigations into self-selected topics of interest. The results could provide educators with valuable information regarding the decision-making tasks of curriculum planning for gifted students and possibly for other students.

Statement of Problem

Is there a significant difference in the quality of subsequent Type III independent investigations of gifted students who were provided organized Type I general exploratory activities and Type

II process skill training, compared to gifted students who received Type II process skill training only?

Statement of the Sub-Problem

Is there a significant difference in the quality of subsequent Type III investigations of gifted students who were associated with mentors as opposed to those without mentors?

Hypothesis to be Tested

There is no significant difference in the quality of subsequent Type III independent investigations of gifted students who were provided organized Type I general exploratory activities and Type II process skill training compared to gifted students who received Type II process skill training only.

Sub-Hypothesis to be Tested

There is no significant difference in the quality of subsequent Type III investigations of gifted students who were associated with mentors.

Significance of the Problem

In the fall of 1985, the school district adopted the Enrichment Triad Model (Renzulli, 1977) as the administrative arrangement to

provide enrichment services to students identified in the resource program for gifted students. Common practices in the district were to provide general Type I enrichment in the elementary schools. Typical enrichment experiences included school assembly programs, guest speakers in the classroom, and class field trips. Some schools had the benefit of artists-in-residence programs. The experiences were generally short-lived and interested students were not usually given the opportunity to investigate more deeply into the topics of their interest. This study was an effort to examine the effects of enrichment experiences on investigations of self-selected topics of interest. The quality of the creative products were evaluated as were the quality of products by students who were associated with mentors.

Assumptions

1. All subjects had an equal opportunity to participate in an independent investigation.

2. The resource class for gifted students is a representation of the high ability students in the school.

3. All subjects received process skill training in the gifted resource room for one (1) hour per week.

Limitations

1. The population of the study was limited to persons from a suburban school district in Eastern Nebraska.

2. Conclusions for the study are only applicable to gifted education programs with independent study components that are similar-sized suburban districts.

3. All subjects are placed in the resource program for gifted students as a result of being placed in the high ability reading group.

4. Evaluation of the study is limited to the results of an evaluation of the quality of independent studies by a team of professionals in the education of gifted and talented students. The evaluation utilized a rating scale format.

5. Students receiving Type I enrichment who were not in the resource program for gifted students did not have the opportunity to participate in further investigation of an interest.

6. The resource teacher was responsible for teaching the process skills in grades 1-6 and supervised all the Type III independent investigators in three schools.

Definition of Terms

Enrichment. Any experience that replaces, supplements, or extends instruction normally offered by the school.

Type I Enrichment. These are general exploratory experiences provided for students that serve as invitations to the students to become involved in the advanced work of independent study. The experiences and activities are designed purposely to expose students to a wide variety of disciplines (fields of study), visual and performing arts, topics, issues, occupations, hobbies, persons, places and events that are not ordinarily covered in the regular curriculum.

Type II Enrichment or Process Skill Training. These experiences are group training activities consisting of materials, methods, and instructional techniques that are concerned with the development of

higher-level thinking and feeling processes. These processes include critical thinking, problem-solving, divergent thinking, creative or productive thinking and learning how to learn skills. Many of the activities are open-ended allowing students to escalate their thinking to the highest levels possible.

Type III Enrichment or Independent and Small Group Investigations. These are activities in which the student becomes an actual investigator of a real problem or topic. In investigative activities and artistic productions, the learner assumes the role of a first hand inquirer who thinks, feels, and acts like a practicing professional.

Schoolwide Enrichment Team. This is a working group of faculty members and parents who have specific responsibilities for organizing the overall enrichment effort for an entire school. It is a key component to link Type I activities to Type III activities.

Self-Directed or Independent Study. This is concerned with creating the environment in which the learner manages and directs his or her efforts toward the attainment of specific goals.

Resource Program for Gifted Students. This is a special placement program for students capable of high performance as demonstrated by their ability in reading and/or general intellectual ability.

Resource Teacher for the Gifted. This is a teacher of classes for the high ability reading group who organizes and teaches process skills and facilitates Type III Enrichment. The resource teacher for gifted students will from now on be referred to as the resource teacher.

Gifted and Talented Children. "Gifted and talented children are those identified by professionally qualified persons who by virtue of outstanding abilities are capable of high performance. These are children

who require differentiated educational programs and services beyond those normally provided by the regular school programs in order to realize their contribution to self and society." (Marland, 1972, p. 10).

Mentors. Mentors are people who agree to tutor or aid gifted students to pursue independent investigations into the field of study with which the mentor is associated. The mentor encourages the student and is the model of the practicing professional.

Organization of the Study

Chapter One is an introduction to the study. A clear statement of the problem with specific questions to be answered and hypotheses to be tested are included. The significance of the problem and its background are considered. Specific purposes of the study are described, and assumptions and limitations are recognized. All important terms have been carefully defined so that the concepts underlying the development of the study may be understood.

Chapter Two includes a review of the important literature related to the study. The literature has been grouped according to enrichment modifications, processes that develop self-direction and independence, and the significance of mentorship.

Chapter Three explains the design of the study in detail. The size of the samples and how they were selected, the variables and controls used, the sources and methods of gathering the data, the reliability of the instrument selected, and the statistical procedures used in the analysis

are described.

Chapter Four includes the presentation and analysis of the data. Discussion of each hypothesis is presented separately. Tables have been used to clarify significant findings.

Chapter Five consists of the summary and conclusions of the study. The problem and sub-problem have been restated with a brief description of the procedures used in the investigation, along with the principal findings and recommendations for further research.

CHAPTER TWO

Review of Related Literature

Introduction

The ultimate goal of education is to produce people who are able to adapt to change, know how to learn, and are able to learn from their experiences. Rogers (1983) writes about what needs to be done to humanize schools. He states:

> We are, in my view, faced with an entirely new situation in education where the goal of education, if we are to survive, is the facilitation of change and learning. The only man who is educated is the man who has learned how to learn; the man who has learned how to adapt and change; the man who has realized that no knowledge is secure, that only the process of seeking knowledge gives a basis for security. Changingness, a reliance on process rather than upon static knowledge, is the only thing that makes any sense as a goal for education in the modern world(p. 120).

Educators must be concerned with facilitating those processes that will enable students to become seekers of knowledge, decision makers, and creative producers of information. The Torrance (1977) study provides support for nuturing creative potential. He studied the issue as to whether high scores on creativity tests in children would predict creative behavior in adulthood. He found 254 adults twelve years

after the testing of a 1959 university high school sample. He determined the adult output (the criterion being for productivity, self reports of creative achievements, poems, original research designs, musical compositions, artwork, etc.) and related it to the output of the first scores. The combined score for the creativity test given earlier correlated significantly with the creative output. He also confirmed the earlier studies of Getzel and Jackson (1962) that creative students tend to choose unconventional occupations.

Goals for the education of gifted children put emphasis on enrichment experiences fostering self-direction, independence, a love of learning and a desire to create and experiment with ideas and things (Passow, 1980). Enrichment for gifted students, the meaning and appropriate arrangements, the process modifications of curriculum and the component of mentoring will be reviewed.

Enrichment

Enrichment is a term commonly used to describe one of the educational curricular provisions for gifted students. It consists of the selections and the organization of appropriate learning-- commensurate to the abilities of this special population.

Program enrichment for gifted students requires a distinguishable difference from the regular curriculum. Tannenbaum (1983) suggested aims that are used in developing enrichment activities for gifted youth. Enrichment programs commonly used are described:

1. To extend, broaden, and deepen children's educational achievement beyond ordinary expectation.

2. To enable children to cultivate higher-level intellective processes for purposes of problem finding and solving.
3. To inspire children toward greater creative productivity.
4. To help children achieve a balanced commitment toward bettering themselves and bettering the human condition.
5. To create for children a wide-ranging encounter with the world of ideas, not just a narrow specialization in a single area of study.
6. To influence the extent and quality of children's out-of-school experiences in learning, producing, and performing in the world of ideas.
7. To enhance children's self-concepts and aspirations for self-fulfillment.
8. To raise children's social status among peers.
9. To create a climate of high morale in children's homes, schools, and classrooms.
10. To influence children's mental health in a positive way (p. 44).

Enrichment in the regular classroom is an administrative modification. It includes normal age-grade norms rather than setting up special classes. A typical class is composed of children of various abilities and interests. Gifted children are provided with activities, materials, and opportunities for a variety of appropriate experiences. Current writings about gifted students claim that enrichment in the regular classroom is superior to other procedures because the teacher is meeting the needs of all children in a fixed goal. Passow (1980) cited possible reasons for favoring regular classrooms as, value judgments, philosophical conviction or difficulties attributing to procedures rather than from experimental studies.

Passow reports an early study where superior attainments of gifted students working in regular classes were found. Another early

study by Dransfield (1933) found that students did profit from a program of self-administered study units with no loss in the usual scholastic areas. Passow (1980) called for schools to get involved in conducting current action research to support the arguments in favor of this wide practice. He reported that there is no universal agreement on the administrative arrangement for gifted children. Educators that favor other types of administrative arrangements claimed that 1) although a gifted child stimulates others to learn, it is at the expense of his own learning; 2) providing adequately for the gifted in the regular classroom requires smaller classes, more materials and services. The cost might be as much or more than other administrative means; 3) the gifted child is more likely to underachieve where his performance may be below his capabilities; 4) the teacher is not necessarily trained or has the skills to provide appropriate learning situations or the appropriate environment

Special classes are a common arrangement in the homogenous ability grouping whereby a small group may be separated from the regular class for contact with a resource specialist. Clark (1983) reported the 1971 hearings held by the U.S. Department of Health, Education and Welfare, where gifted students expressed a preference for programs where they are separated for part of a day, but not totally segregated from other students. Martinson (1972) reported research findings to indicate the longer the gifted are allowed to be in special programs the greater will be their gain.

Special classes have been a controversial issue for many years. Those who support special classes maintain that: 1) the gifted students stimulate other gifted students and create support for each other;

2) special classes provide for more challenging activities and greater depth through a flexible program; 3) teachers can be especially trained to attend to the special needs of gifted children. Reasons for opposing special classes offer support for enrichment in the regular classroom: 1) elitism is promoted with students selected for special treatment, 2) identification may be inaccurate, 3) they encourage excessive competition (Passow, 1980).

Although the arrangements appropriate for the administrative services of the gifted still remain controversial, the processes of organizing appropriate learning experiences can be modified (Maker, 1982). The change in the process of the learning experience involves the emphasis on the use of knowledge rather than the acquisition of knowledge. Maker reported the classic studies of classroom interaction (Gallagher, Aschner and Jenne, 1967; Taba, 1966) that when teachers ask low level questions, they get low level responses; and if they ask high level questions, they get high level responses. There are many existing systems for analyzing the levels of thought and helping teachers with questions and activities. The most common is The Taxonomy of the Cognitive Domain (Bloom, et al, 1956) which includes a six-tier hierarchy of cognitive functions that can be used as a conceptual framework for enrichment. The three-level thinking processes such as analysis, synthesis, and evaluation have greater purpose when planning appropriate enrichment instruction for gifted children.

Other classification systems emphasizing the processes of using information were presented by Maker (1982):

1. Bruner's (1960) three aspects of a learning episode (e.g., acquisition, transformation, evaluation);

2. Parnes's (1966) Creative Problem Solving Process, which has five steps emphasizing use of information in the process of solving problems (fact finding, problem finding, idea finding, solution finding, acceptance finding);
3. Kohlberg's (1966) six levels of moral reasoning (obedience and punishment orientation, instrumental relativist orientation, interpersonal concordance orientation, "law and order" orientation, social contract/legalistic orientation, universal ethical principle orientation);
4. Taba's (1964) four types of thinking skill clusters, also including sequences of skills within each cluster (concept development, interpretation of data, application of generalizations, resolution of conflict);
5. Taylor's (Stevenson, Seghini, Timothy, Brown, Lloyd, Zimmerman, Maxfield, and Buchanan, 1971) six talent areas (academic, creative, decision making, planning, forecasting, communication) that include levels and types of think skills;
6. Williams's (1970) thinking processes (fluency, flexibility, originality, elaboration) and feeling processes (curiosity, risk taking, complexity, imagination); and
7. Guilford's (1967) five operations (cognition, memory, divergent production, convergent production, evaluation). (p. 36).

Most of the preceding paradigms emphasized the need for developing advanced abilities in cognition and especially in divergent production. Tannenbaum (1980) acknowledged that many were not designed especially for gifted children although they succeed very well because they are better able to apply what they learn.

The Enrichment Triad (Renzulli, 1977) is one of the few enrichment paradigms that proposes special content for gifted students.

However, Renzulli does not propose an honors-type or "presented" curriculum. He shifts initiative from the teacher to the student.

Enrichment, as conceptualized by Renzulli (1979), aims at allowing students in programs for the gifted complete freedom of choice in the topics to be studied and in their preferred style of learning. The primary role of the teacher is that of facilitator for problem identification and structuring relative to student interest as well as skill and method acquisition for the problem investigation. The Renzulli Enrichment Triad (1977), a model for enrichment programming, includes the following sections:

> Type I: general exploratory activities aimed towards developing thinking and feeling processes to enable students to deal more effectively with curriculum content;
> Type II: group training activities (problem solving, inquiry, creative thinking, learning how-to-learn skills of questioning, locating information, data collection, and communication);
> Type III: individual investigations of real problems directed towards appropriate product outlets such that the first two types of enrichment are deemed appropriate for all learners whereas the third and major focus of the model is for gifted students (p. 13). (See Appendix A)

The Renzulli model evolved as a result of his experiences as an evaluator of programs for exceptional students that were considered enrichment programs. He found practices of instruction to be little more than a random collection of kits, games, puzzles, and 'artsy-craftsy' projects, reiterations of practices for all children, and sometimes just a means to entertain gifted and talented students rather than to adapt to

their attributes. Renzulli (1977) interviewed scholars of various disciplines. At that time, he thought that mental processes were the answer in programming for gifted students. However, the processes did not match the reality of inquiry in a discipline. He noted that scholars were seldom engaged in training exercises of games, puzzles, or stunts.

Studies in inquiry (Gallagher, 1975; Verbecke and Verbecke, 1972) determined that after information is outmoded, inquiry methods remain. They are enduring and are the appropriate means to acquire knowledge. Renzulli saw methods of inquiry, actively doing something, as the engagement of solving real problems. Another practical consideration was that inquiry methods could help students keep pace with the rapid expansion of knowledge.

Renzulli (1983) suggested general principles as to why teachers could consider enrichment as inquiry:

1. Students should be allowed to pursue their own interests to whatever depth and breadth of attainment personal incentive dictates.
2. Pursuit of interests should be consistent with the styles of learning of the learner.
3. The role of the teacher is to provide assistance.
4. The teacher should assist in identifying interests and structuring realistic and solvable problems.
5. The teacher should assist the student in gaining investigative skills and getting access to resources.
6. The teacher should assist in finding appropriate outlets and recognition for the products of the students (p. 51).

After searching four database systems, there was no evidence of studies published to either support or dispute the match between Type I and Type III enrichment. Renzulli (1985) acknowledged the

schoolwide enrichment team as a key component in the Triad Model. However, studies have not been published to either support of dispute the finding.

Independent, Self-Directed Learning

Although much concern and discussion about programming for gifted and talented students has developed over the years, a common goal in programs is to encourage the independence of the learner (Treffinger, 1978; Betts, 1985). Independent learning is not doing everything you want to do when you want to do it. It is concerned with autonomous, self-managed and self-directed behavior. This behavior is developed by learning to make choices and decisions, assuming the responsibility for those choices and decisions, learning to define problems and a plan of action for their solutions, and learning to evaluate those actions (Feldhusen and Treffinger, 1980). The challenges are the methods, techniques, materials, and environments that can be utilized in a program to develop independent learners. In a recent study, Isaksen (1983) found evidence that many (60) sixty per cent of the program developers and curriculum planners for the gifted rely on the lowest level of curriculum planning (the processes of fluency, flexibility, originality of ideas) versus the highest level of independent inquiry and self-directed learning with product development. He suggested that there needs to be more intensive investigation and study in the area of curriculum development for gifted students.

Treffinger (1978) recognized that the major emphasis in curriculum development must be in actively involving the learner in a

more complex pursuance of real problems or challenges than can be attained through enrichment activities of kits, games or isolated learning packages. Problem solving techniques can be taught (Parnes, 1967; Feldhusen and Treffinger, 1980) and should be applied to authentic versus contrived situations. Students certainly will need to be able to deal effectively with the problems they will encounter in their lifetimes.

The studies of Torrance (1970, 1979); Callahan (1978); and Dunn and Dunn (1979) indicated that the environment is very important in fostering independence. Nuturing environments found to foster independence are those in which adults do not tell children to be independent, but actually help them develop independence and respect for unusual ideas and divergent thinking. These environments provide freedom to allow students to utilize their different ways of learning (styles, preferences, or modalities). A study with implications of learning style data for instruction of elementary gifted students verified that the gifted are persistent, are independent of thought and judgment, need less structure, and prefer to learn through their tactile and kinesthetical senses (Dunn and Price, 1980). Another study by Okaboyashi and Torrance (1984) supported the role of learning style and thinking with self-directed learning readiness. They studied 148 intellectually gifted fourth-seventh graders and found that the high achievers showed highest usage of integrative thinking styles (right and left hemisphericity of the brain). They also found self-directed learning readiness was low because teacher-directed learning predominated. Environments should encourage learning about the future and the unknown, not just the past and the present, and they also should provide opportunities for bringing students into contact with ambiguity, uncertainty, new perspectives, unsolved

issues, or puzzling phenomena (Treffinger, 1978). Treffinger cautioned teachers that encouraging independence may be threatening to teachers of the gifted as well as classroom teachers:

> Too often we want our students to be independent within the curriculum we define. We want students who are "gifted, but nice" . . . satisfied to be independent every Tuesday afternoon from 4:00-6:00 p.m., when they can be led to the gifted resource room to do nice, safe little exercises that make up The Gifted Curriculum. (p. 218)

Encouraging independent behavior may lead teachers in directions they cannot control and demand that existing methods be examined. Certainly, the teacher of gifted students cannot possibly have knowledge about every area of interest of a student; however, it is the responsibility of the teacher to find people (experts) in the topic to assist the student. It is hoped that encouraging self-directed independent learning will also result in the constructive personal growth of the student.

Mentorship

General exploratory enrichment, such as planned field trips, speakers, and interest centers in the classroom, must provide gifted students with opportunities for looking into and becoming involved with subjects of interest. Gifted students need opportunities to probe areas of interest and become actively involved with a subject rather than just work through assigned lessons, view displays or hear speeches (Renzulli, 1985). Mentoring is an educational, yet inexpensive experience for the

gifted. Any student who wishes to delve deeper into a particular topic could be assisted by a mentor or an expert in that topic. A mentor for gifted and talented students can be described as a "person of competence who volunteers to instruct a student in areas of mutual interest" (Runions, 1980, p. 152). During the 1970's Runions developed the Mentor Academy Program (MAP) which was a skill-based classroom model linking gifted adolescents with community mentors. The success of that program provided the expansion of the mentorships to all ability students with a sincere interest in pursuing a study.

Torrance (1984) claimed that match-making is a delicate process between mentor and student. The interests and abilities of the student, the skills of the mentor, resources, transportation, and scheduling need to be taken into account. Subjective considerations such as personality and expectations are very important. Torrance has been involved in important research indicating the powerful effects of mentorship experiences or the lack of such experiences on creative productivity (Torrance, 1983). In a twenty-two year longitudinal study of mentor roles in creative achievement, having a mentor was found as a prediction of adult creative achievement. He also found that although there may be drastic differences in the external structure of the mentorship program, the core of the program is always the one-to-one relationship between student and mentor. Successful mentors take a personal interest in their students and are able to provide guidance without smothering initiative. The mentor treats the student like a junior colleague, sharing information and providing creative situations in which the student can use what he or she has learned. Scholars need to be utilized in the classroom as mentors, Internships with experts, especially in science and math, should be

conducted throughout high school. Shamonoff (1985) recognized the success of a year long mentor project for women during the 1982-83 school year. The project was introduced as a pilot model in one elementary school in the middle grades of 5 and 6. The project was meant to open up new career avenues for gifted girls. It was expanded to include more schools for the next year with the belief that more gifted girls would benefit from participation with successful career women. Another study (Boston, 1976) reported advantages of mentoring: 1) develops trust in self as a learner, 2) creates a more relaxed learning environment, 3) facilitates closer monitoring of student achievements, 4) fosters greater appreciation of all ages for all ages. He cautioned that the organizaiton of mentors programs is not easy and requires much time and effort. Resource teachers must obtain cooperation from regular classroom teachers since project students sometimes have to leave their regular classroom to meet mentors. The resource teacher would spend time at school and on the telephone at home helping mentors resolve problems and obtaining resource materials for the project.

A study by Gray and Rogers (1982) found that gifted students used significantly more community resources and people in the work force when involved in the "Mentor-Assisted Enrichment Projects" (MAEPs) than they did when they worked on self-directed enrichment projects. In addition, the students completed and presented more Renzulli Type III enrichment projects while working with a mentor than when working independently.

Renzulli (1985) suggested the following as ways to organize the identification and selection of mentors: 1) parents and the community can be surveyed as to their expertise in various disciplines, 2) files can be

kept, noting what types of enrichment with which each volunteer is willing to help, 3) mentor sources relationships can be established through use of the file.

Summary

Enrichment for gifted students is a controversial issue when examining the best administrative arrangements. Experts disagree about how enrichment should be provided. However, they do agree that the curriculum for gifted students requires a distinguishable difference from the regular curriculum. Maker (1982) showed current enrichment paradigms that emphasize the processes of using knowledge. Studies by(Gallagher, 1975) and (Verbecke and Verbecke, 1972) support inquiry as an appropriate means of knowledge acquisition. They claimed that the inquiry methods of actively investigating is a practical consideration to help students keep pace with the rapid expansion of knowledge.

Renzulli (1977) proposed that the curriculum for gifted students can be differentiated from the regular classroom. He described the first two types of enrichment, Type I and Type II to be appropriate for all learners; but considered them important for gifted and talented youth because they attempt to expand students interests and develop the thinking and feeling processes.

Renzulli (1985) considered the Type III enrichment to integrate the inquiry methods of investigation and the methods of self-directed learning with the thinking and feeling processes. This is a major focus of education for gifted pupils. He claimed that programs that focus entirely on process training cannot be defended as gifted education.

The Type III independent investigations would become student-

directed investigations of self selected topics of interest, requiring the student to become a producer rather than a consumer of knowledge. The role of the teacher becomes one of a guide to provide assistance.

Mentorship is a concept of enrichment that helps the teacher provide assistance and is vital in independent, self-directed learning. Successful mentoring requires the match between mentor and student interests and personalities (Torrance, 1984).

Preview

Chapter Three will explain the design of the study in detail. This includes (1) the size of the samples and how they are selected, (2) the variables and procedures followed, (3) the sources and methods of gathering the data, and (4) the reliability of the selected instrument, along with statistical procedures which were used in the analysis.

CHAPTER THREE

Research Design and Procedures

Purpose of the Study

The purpose of the study was to determine if there was a significant difference in the quality of subsequent Type III independent investigations of two groups. The products of gifted students who were provided organized Type I general exploratory enrichment and Type II process skill training were compared to the products of gifted students who received Type II process skill training only. The difference in the quality of those products associated with mentors was also compared.

An hypothesis and a sub-hypothesis were formulated for research. The hypothesis was formulated to measure the effects of Type I enrichment (the independent variable) on subsequent Type III independent investigations into self-selected topics (dependent variable). The sub-hypothesis was formulated to measure the effects of mentoring (the independent variable) on the quality of subsequent Type III independent investigations into self-selected topics of interest (dependent variable).

Description of Procedures

In the fall of 1985, a quasi-experimental design study was conducted in a small suburban school district in Eastern Nebraska. Two of the six elementary schools were selected to be involved for one academic year. The school selected for the students in the experimental group had a total enrollment of 263 students. The school selected for the

students in the control group had a similar population of 247 students. Both schools were located in middle class neighborhoods composed of both professional and non-professional workers.

Students in the third, fourth, fifth and sixth grades were selected on the basis of their placement in the education for gifted students resource program. The students placed in the program were in the highest ability reading group in their grade level. A total of 42 students participated in the experimental group, while 39 students composed the control group.

All subjects in both groups had equal opportunity to participate in the investigation of a self-selected topic of interest. Early in the year, an explanation of the Enrichment Triad Model (Renzulli and Reis, 1985) was presented in each resource class for gifted students. The independent study (Type III) component was to be an optional experience for motivated students with a sincere interest in doing advanced level study.

The experimental group of students received Type II process skill training for a 50-minute period once per week, as well as the additional organized services of mentors, individual field trips, assembly programs, and speakers (Type I Enrichment) through the efforts of a schoolwide enrichment team.

The control group of students also received the Type II services for a 50-minute period once each week. Although Type I enrichment was not organized by a schoolwide enrichment team, incidental enrichment did occur.

In September at the experimental school, a schoolwide enrichment team was organized consisting of the school principal, the

resource teacher, classroom teachers, the reading specialist, the art specialist, and parent representatives from the parent organization of the school. The duties of the enrichment team were to gather information about student interests from classroom teachers to provide the basis for scheduling enrichment events, to review curriculum enrichment materials, and to set up a resource file of school and community persons who might present enrichment sessions or serve as mentors for the students involved in the advanced Type III Enrichment (See Appendices B-D).

The resource teacher presented an in-service to teachers about Type I Enrichment and the duties of the enrichment team in an effort to gain schoolwide cooperation. Several teachers liked the ideas and volunteered to help in any way they could. The teachers conducted brainstorming sessions with the students in their classrooms to develop lists of topics of interest. The enrichment team compiled the lists as the basis to begin scheduling enrichment events at the school. At a parent orientation meeting, the resource teacher surveyed the population for possible resources for Type I Enrichment. The surveys were recorded, compiled, cataloged, and filed for current reference. Parent volunteers took surveys to various community organizations and many responded by returning the completed survey. Surveys were also sent to faculty members at the other elementary schools, the middle school and the high school.

As students developed interests in a variety of areas, they scheduled appointments with the resource teacher for an interest interview. If the resource teacher determined a genuine interest and a high level of motivation were evident, students began to develop a

management plan with a tentative time line of events targeted at an indepth investigation (See Appendix E). Each student participating in a Type III Enrichment project set up weekly or biweekly appointments with the resource teacher to monitor his/her progress. Through the efforts of the enrichment team, community mentors were provided as needed. A careful appointment record of each student was kept by the resource teacher as well as a record of mentorship appointments.

At the control school, students also pursued Type III investigations beginning with an interest interview, development of a management plan, and a time line of events for completion of an in-depth study.

By the middle of March products were submitted to the resource teacher from the students who signed contracts to complete a study. The products varied widely in topic. A sample of the topics included creative endeavors such as musical compostitions, playwriting and producing, computer programming, robotics, authoring, historical research and photography, drug abuse, sports medicine and scientific experiments. Because of the nature of various products (i.e. creative productions), each student was asked to write a narrative account of his/her study including: 1) the topic of interest, 2) the focus of the problem(s) stated in question form, 3) the procedures used to investigate the topic, 4) the problems encountered by the student and how they were solved, 5) the conclusions about the study--what was enjoyed, what could be improved and any aspect that might be worth further investigation.

A panel of three judges was selected to evaluate the products. A professor of education for the gifted at a local university chose people

with a background and training in the field of gifted education. Each evaluator held the position of a resource teacher for gifted students in nearby school districts.

A double-blind method of product coding was used so that the judges did not know the product ownership or the control or experimental group placement. Each judge rated each product according to specific qualitative characteristics and factors related to the overall product quality. The ratings by each judge on each product were totalled. A mean score for each product was calculated.

Data-Gathering Instrument and Statistical Treatment

An instrument entitled the Student Product Assessment Form (SPAF, Renzulli, Reis, and Smith, 1981) was used by the panel (See Appendix F). The instrument provided eight specific qualitative characteristics of products:

1. Early Statement of Purpose
2. Problems Focusing
3. Level of Resources
4. Diversity of Resources
5. Appropriateness of Resources
6. Logic, Sequence, and Transition
7. Action Orientation
8. Audience

Seven factors were related to the overall product quality:

A. Originality of the Idea

B. Achieved Objectives Stated in Plan

C. Advanced Familiarity with Subject

D. Quality Beyond Age/Grade Level

E. Care, Attention to Detail, etc.

F. Time, Effort, Energy

G. Original Contribution

The validity and reliability of the instrument were established through a year long series of studies that yielded a high reliability co-efficient of .98 (Renzulli, Reis, 1985, p. 43).

A comparison was made between the mean scores of each group. A test for significant difference in comparing the means of the two groups was needed. The t-test was administered to determine if there was a significant difference in the mean scores of the two groups comparing the quality of the products of the experimental group to the quality of the products in the control group.

Another comparison was made between the mean score of the group associated with mentors and the mean score in the control group. The t-test was used to see if a significant difference existed between the means of the groups.

Preview

Chapter Four will present an analysis of the data that were gathered on the Student Product Assessment Form (Renzulli, Reis, and Smith, 1981). The test results will be discussed. Tables will be presented.

CHAPTER FOUR

Presentation and Analysis of Data

Data collected on the experimental group showed 42 students participating in the experimental group. Products were completed by 16 students, 11 of which were associated with mentors. The control group was composed of 39 students, with 13 completing products.

Table1 displays by grade level the number of students participating in the study, the number of products completed, and the percentage of products completed. The number of mentors associated with the products are presented. Each group is separated for clarity of information.

Table 1

Number of Students in the Study By Group, Grade, Project and Mentors

Experimental Group

	No. of Students	No. of Completed Products	% of Completed Products	Mentors
Grade				
3	8	4	50	2
4	12	4	33	4
5	10	5	50	3
6	12	3	25	3
Total	42	16		12

Control Group

3	8	1	13	
4	7	2	28	
5	11	5	50	
6	13	5	30	
Total	39	13		

On April 1, 1986 the scores from the Student Product Assessment Form (SPAF, Renzulli, Reis, and Smith, 1981) rating scale were analyzed. The scores from each evaluator were totaled on each product and a mean score was determined for each product. The statistical treatment of each hypothesis will be discussed separately.

Hypothesis

> There is no significant difference in the quality of subsequent Type III independent investigations of gifted students who were provided organized Type I general exploratory activities and Type II process skill training compared to gifted students who received Type II process skill training only.

A t-test was administered to determine the significance of the difference between the means of the control group and the experimental group. The experimental group student scores were $\overline{X}$ = 53. 56, SD = 7.13. The control group scores were $\overline{X}$ = 46.77, SD = 4.92. The mean scores of the experimental group were significantly higher on the Student Product Assessment Form (SPAF, Renzulli, Reis, and Smith, 1981). The t-test calculations revealed the significance of the difference between the means of the two groups. The Critical Values of Student's Distribution table was used to determine the critical value of t (df=27, t=3.02, $p < .01$). The null hypothesis was rejected because the critical value of t was greater than 2.771 at $p < .01$ level.

Table 2

Mean Scores, Standard Deviation, and t-Test Scores for the Student Product Assessment Form

Group	N	Mean Score	Standard Deviation	t-Test Score
Experiment	16	53.56	7.13	3.02
Control	13	46.77	4.92	

Sub-Hypothesis

There is no significant difference in the quality of subsequent Type III investigations of gifted students who were associated with mentors.

The mean scores of the experimental group associated with mentors were compared with the mean scores of the control group. $\bar{x}$ - 53.50, SD - 6.80 in the experimental group compared to $\bar{x}$ - 46.77, SD - 4.92 in the control group. The mean scores of the experimental group associated with mentors were significantly higher on the Student Product Assessment Form (SPAF, Renzulli, Reis, and Smith, 1981). The t-test calculations revealed the significance of the difference between the means of the two groups. The Critical Values of Student's Distribution table was used to determine the critical value of t (df-23, t-2.82, $p<.01$). The null hypothesis was rejected because the critical value of t was greater than 2.807 at $p< .01$ level.

Table 3

Mean Scores, Standard Deviation and t-test Scores for the Student Product Assessment Form Associated with Mentors

Group	N	Mean Score	Standard Deviation	t-test Score
Experimental	12	53.50	6.80	
				2.82
Control	13	46.77	4.92	

In conclusion, the t-tests of both the hypothesis and sub-hypothesis show significant differences of the means at the $p < .01$ level. There was statistical significance in favor of the experimental group in relation to both questions.

Preview

Chapter 5 will summarize the main points of the study and report important findings and relevant conclusions. Recommendations for further investigation and research will be indicated.

CHAPTER 5

Summary, Conclusions and Recommendations

Summary and Conclusions

The main purpose of this study was to determine the effects of organized Type I enrichment on the quality of Type III independent investigations. A quasi-experimental group design was used. The experimental group was provided Type II process skill training, Type I enrichment experiences and mentors associated with their Type III independent investigations. The control group received Type II training only with incidental occurrences of Type I enrichment.

The data analysis resulted in the following findings:

1. Organized enrichment experiences significantly affected quality of Type III independent studies as measured by the experimental and control group scores on the Student Product Assessment Form (SPAF, Renzulli, Reis, and Smith, 1981).
2. Mentors associated with the Type III independent studies significantly affected the quality of Type III independent studies as measured by the experimental and control group scores on the Student Product Assessment Form (SPAF, Renzulli, Reis, and Smith, 1981).

These findings provide evidence that the organized efforts of Type I

enrichment would probably make a difference in the quality of Type III independent investigations when applied to similar populations of students. The experimental group received organized Type I enrichment and had the benefit of mentors in many cases. This evidence suggests the merits of investigation into organized mentor programs.

Recommendations

As a result of this study, it is recommended that the school district consider organizing enrichment teams in other elementary school buildings. This effort would require support and enthusiasm by the building administrator; therefore, suggesting that schools volunteer for the enrichment team approach. It is also recommended that the area of independent study be supported as a successful method in curriculum planning for gifted students; and that the self-selected topic of investigation, communicated to real and appropriate audiences, be encouraged in other schools.

Schools should analyze how present curriculum is presented in the regular classroom and make decisions regarding the possibility for the inclusion of independent investigations. Many self-selected topics might be direct outgrowth of existing curriculum. Compacting existing curriculum so that the student has time in the regular classroom for work on independent study is necessary.

It is further recommended that the school district realize the time and effort needed in organizing and managing independent studies and consider the following suggestions:

1. Additional training for the resource teacher in these areas:
   a) helping a student focus on a problem investigation of a topic.
   b) the "how to" of studying various disciplines
   c) time management plans
   d) the organization of the communication of study results to real and appropriate audiences
   e) how to help regular classroom teachers compact the regular curriculum so that the student has enough time for the study
2. As a long range goal, the addition of resource teachers, to include one per building
3. Investigation of various mentorship programs to further encourage use of mentors in the schools

Recommendations for Further Study

It would be interesting to see how the interests of the student develop. Did students become interested in topics that were purposely planned activities by the enrichment team or were they other long-time interests of the student? The study raises questions about the degree of mentor and Type I involvement. Is there a relationship between the degree of experiences a student has and the quality of his product? Will the quality of the products of the students continue to improve and if so, how much? Will students decide to participate in an independent study in the following years? Will these experiences be a springboard for more advanced study of the same topic? Is it the abilities of the individual resource teacher to keep the program functioning successfully or is the

success inherent in the organization of the program?

Will other students not identified in a program for gifted students benefit from independent study provisions in their regular school program? If so, to what extent?

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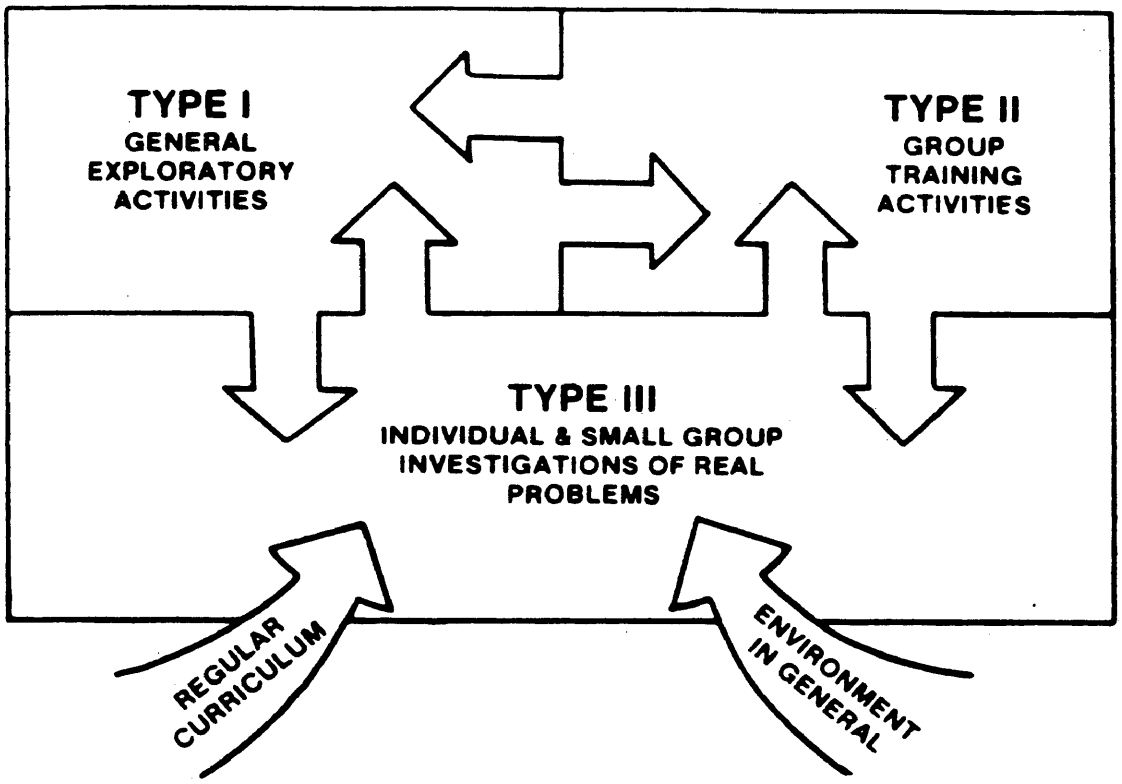
APPENDICES

APPENDIX A

THE ENRICHMENT TRIAD MODEL



TYPE I ENRICHMENT

Type I Enrichment consists of experiences and activities that are designed to bring the learner in touch with the kinds of topics or areas of study in which he or she may develop a sincere interest. Through involvement in Type I experiences, students will be in a better position to decide if they would like to do further research on a particular problem or area of interest.

TYPE II ENRICHMENT

Type II Enrichment consists of materials, methods and instructional techniques that are concerned with the development of higher-level thinking and feeling processes. These processes include critical thinking, problem solving, inquiry training, divergent thinking, awareness development and creative or productive thinking. Type II activities are open-ended and allow students to escalate their thinking processes to the highest levels possible. Type II activities are also designed to introduce students to more advanced kinds of studies.

TYPE III ENRICHMENT

Type III Enrichment consists of activities in which the student becomes an actual investigator of a real problem or topic by using appropriate methods of inquiry. The success of a Type III activity depends on the interest and task commitment of the individual student. Examples of intensive, long-range Type III activities include: the creation of a walking robot; the production of a dramatic marionette show which outlines the development of clowns from the thirteenth century to the present; a continuation of Tolkien's *Lord of the Rings* in the form of a novel; the writing and illustration of a Children's Christmas Book; etc.

APPENDIX B

COMMUNITY RESOURCES SURVEY

Directions: Please scan this list in search of subjects that reflect your personal interests, skills, talents or experiences. Circle any subjects which you feel able to discuss with interested students.

Social Sciences

1. Anthropology
2. Alcohol and Drugs
3. American Culture
4. History
5. Amish
6. Archaeology
7. Black History
8. Careers
9. Child Abuse
10. Cowboys
11. Crime/Criminology
12. Current Events
13. Death/Dying
14. Elections
15. Ethnic Heritage
16. Families
17. Famous People
18. Festivals/Holidays
19. Foreign Policy
20. Futures
21. Genealogy
22. Geography
23. Government
24. Handicapped People
25. Hypnosis
26. Indians
27. Law/Courts
28. Mental Illness
29. Military
30. Ohio History
31. Penology Prisons
32. Politics
33. Pollution
34. Population Control
35. Presidents
36. Psychology
37. Public Opinion
38. Pyramids
39. Religion
40. Senior Citizens
41. Social Problems
42. Unions
43. United States
    (_____)
    specific state
44. Urban Development/City Planning

Social Sciences (con't)

45. Wars
46. Women's Rights
47. Wild West
48. World Affairs
49. World Travels
    (_____)

Language Arts/Communication

50. Advertising
51. Authors
52. Book-Making
53. Broadcasting
54. Comic Strips
55. Communication
56. Debate
57. Etymology
58. Foreign Languages
    (_____)
59. Game Design
60. Graphics/Printing
61. Handwriting/Graphology
62. Interviewing
63. Journalism/Newspapers
64. Legends
65. Letter Writing
66. Libraries
67. Linguistics
68. Literature
69. Mythology
70. Oral History
71. Play Writing
72. Poetry
73. Polling
74. Public Speaking
75. Publishing
76. Shakespeare
77. Sign Language/Deafness
78. 20th Century Writers

Science

79. Agriculture/Farming
80. Anatomy
81. Animals
82. Astrology/Stars
83. Astronomy
84. Biology

Science (con't)

85. Biorhythms/Chronobiology
86. Birds
87. Botany
88. Chemistry
89. Conservation
90. Dinosaurs
91. Disasters
92. Ecology
93. Electronics
94. Energy
95. Engineering
96. Evolution
97. Fish
98. Fossils
99. Forestry
100. Genetics
101. Health/Medicine
102. Human Body
103. Insects
104. Inventions
105. Metals
106. Microscopes
107. Monsters
108. Natural Resources
109. Nature Study
110. Nutrition
111. Oceanography
112. Optics
113. Outdoor Education
114. Outer Space/Aeronautics
115. Phobias/Fears
116. Physics
117. Pollution
118. Reptiles
119. Robots
120. Rocks and Minerals
121. Rockets
122. Scientific Method/ Scientists
123. Snakes
124. Weather
125. Wildlife

COMMUNITY RESOURCES SURVEY (continued)

Mathematics

126. Accounting
127. Algebra
128. Banking
129. Business
130. Calculators
131. Chisanbop
132. Computers
133. Consumerism
134. Economics
135. Geometry
136. Inflation
137. Metrics
138. Money Management
139. Statistics/Probability
140. Stock Market
141. Taxes

Visual/Performing Arts

142. Acting
143. Animation
144. Antiques
145. Architecture
146. Art History
147. Artists
148. Ballet
149. Broadway
150. Calligraphy
151. Cartooning
152. Choreography/Dancing
153. Cinematography/Film-making
154. Clay
155. Clowns
156. Commercial Art
157. Costumes Design
158. Dramatics
159. Drawing
160. Folk Art/Music
161. Graphics
162. Make-Up Design
163. Modern Dance
164. Movies
165. Musical Instruments
166. Music Theory
167. Musicians
168. Opera
169. Origami
170. Painting
171. Pantomine
172. Photography
173. Play Production

Visual/Performing Arts (con't)

174. Puppetry
175. Radio Shows
176. Television
177. Theatre
178. Weaving

Thinking/Research/Study Skills

179. Brain Games
180. Chess
181. College
182. Creativity
183. Decision-Making
184. Deductive/Inductive Reasoning
185. Human Relations
186. Imagination
187. Leadership Training
188. Listening Skills
189. Logic
190. Memory Skills
191. Preparing AV Materials
192. Problem-Solving
193. Research
194. Simulations
195. Speed Reading
196. Typing
197. Values/Moral Education

Careers/Avocations

198. Advertising
199. Aviation/Airplanes
200. Construction
201. Cosmetology
202. Dentistry
203. Drafting
204. Fashion Design
205. Food Services
206. Industry
207. Insurance
208. Interior Decorating
209. Journalism
210. Landscaping
211. Law/Lawyers
212. Law Enforcement
213. Manufacturing
214. Medicine/Surgery
215. Merchandising
216. Nursing
217. Optometry
218. Psychiatry/Psychology
219. Real Estate

Careers/Avocations (con't)

220. Retailing
221. Secret Service
222. Transportation
223. Veterinarian
224. Ventriloquism

Recreation

225. Aerobics
226. Archery
227. Backpacking
228. Baton Twirling
229. Beekeeping
230. Boating
231. Bicycles
232. Camping
233. Cars
234. C.B. Radios
235. Cheerleading
236. Coins/Stamps
237. Crafts
238. Drag Racing
239. Gardening
240. Horses
241. Houseplants
242. Hunting
243. Kites
244. Magic
245. Martial Arts
246. Model Building
247. Motorcycles
248. Orienteering
249. Pets
250. Sailing
251. Scuba Diving
252. Snowmobiles
253. Sports (_____)
254. Toys
255. Treasure Hunting
256. War Games
257. Woodworking

Is there any other information about your career, travels, education, cultural experiences, hobbies, publications, collections, competitions, community activities, politics, research, pet projects, or special interests that you are willing to share with us?

_____

_____

_____

COMMUNITY RESOURCES SURVEY (continued)

WOULD YOU BE WILLING TO SHARE YOUR SPECIAL TALENTS AND INTERESTS WITH THE CHILDREN IN OUR ENRICHMENT PROGRAM? If yes, please indicate the format(s) you would prefer:

a. _____ I am willing to conduct a 45 minute lecture/discussion/demonstration with groups of interested students.

b. _____ I am willing to teach a short workshop for a small group of interested students.

c. _____ I am available for a phone conference with a student who shares my interests.

d. _____ I am willing to have a private conference with a student who shares my interests.

e. _____ I am willing to have interested student(s) visit me at my place of business/home.

f. _____ I am willing to answer written correspondence from a student who shares my interests.

g. _____ I am willing to commit ten or more hours to serve as a mentor for a student who shares my interests.

h. _____ I am willing to help serve as an evaluator of a student's project in a mutual interest area.

i. _____ I can suggest other resource people, organizations, and/or introductory books and magazines in my interest area(s).

If we are able to schedule a working session for students who share your interests, would you:

_____ volunteer your time and expertise?

_____ require payment? If so, what are your fees? _____

_____ have any other special limitations? Please specify. _____

_____

_____

Your Name _____

Profession _____ Place of Business _____

Business Address _____

Home Address _____

Business Phone _____ Home Phone _____

Please accept, in advance, our appreciation for your time and cooperation in sharing information about your experiences and talents. Your expertise will certainly be a valuable addition to our enrichment program.

OFFICE USE ONLY

Resource Codes: _____

APPENDIX C

Action Form 3
TYPE I PLANNING GUIDE

Check all that apply:

____ General Matrix _____

____ Grade Level _____

____ Subject Area _____

Methods of Delivery																	
I. Resource Persons																	
Speakers																	
Mini-Courses																	
Demonstrations																	
Artistic Performances																	
Panel Discussion/Debate																	
Other _____																	
II. Media																	
Films																	
Filmstrips																	
Slides																	
Audio Tapes/Records																	
Videotapes																	
Television Programs																	
Newspaper/Magazine Articles																	
Other _____																	
III. Other Resources																	
Interest Development Centers																	
Displays																	
Field Trips																	
Museum Programs																	
Learning Centers																	
Other _____																	

APPENDIX D

Action Form 5a
RESOURCE DIRECTORY CARD
Resource Persons

Card Number _____

Topic _____

NAME:

TOPIC:

ADDRESS:

PHONE:

CONTACTS MADE:

Action Form 5b
RESOURCE DIRECTORY CARD
Other Resources

Topic _____

TITLE:

MODE OF DELIVERY:

ADDRESS/CONTACT PERSON:

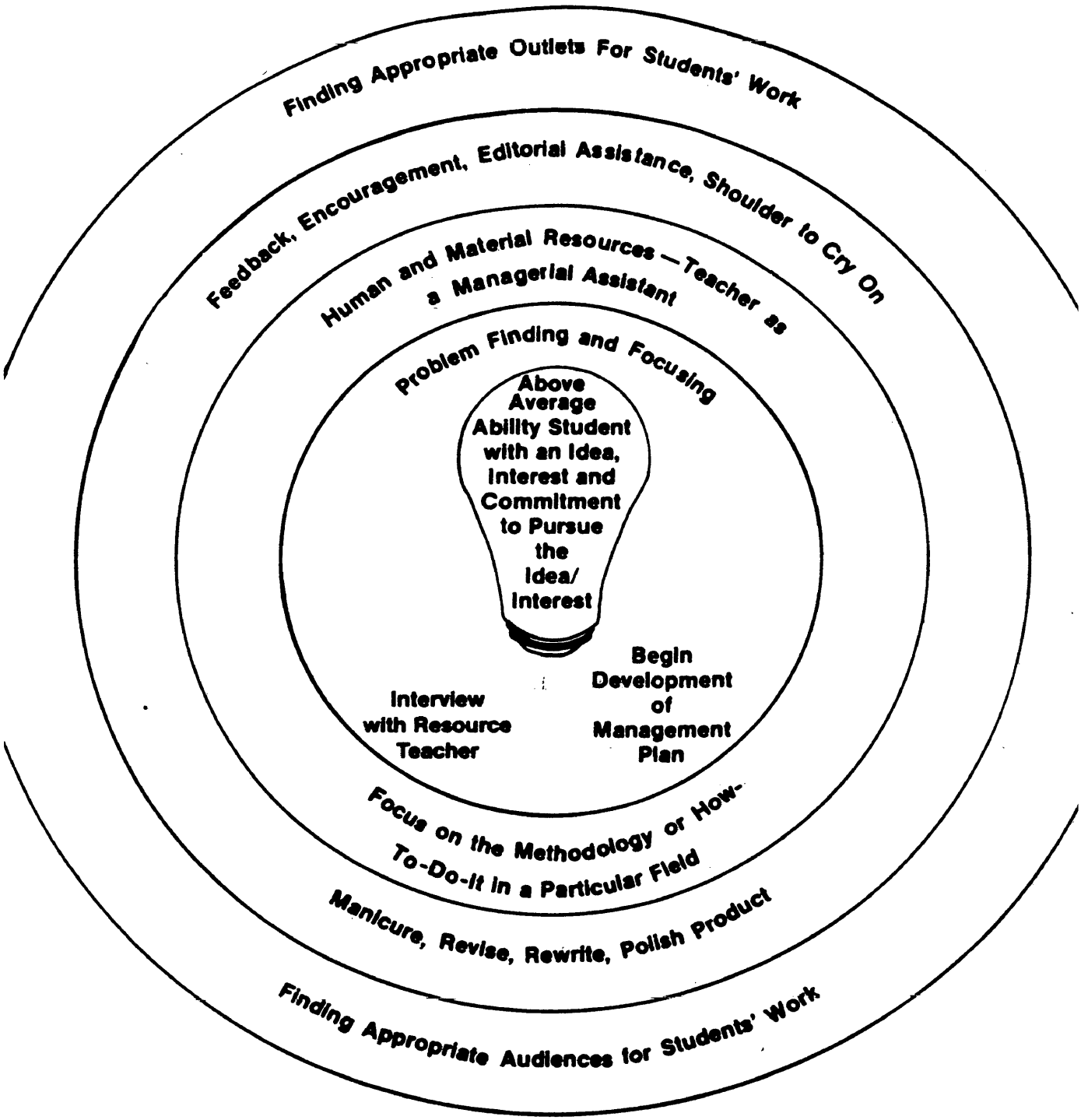
PHONE:

NOTES:
- **Availability:**
- **Cost:**

CONTACTS MADE:

APPENDIX E

Figure 25
TARGETING ON TYPE III



APPENDIX F

STUDENT PRODUCT ASSESSMENT FORM
SUMMARY SHEET

Name(s) _____ Date _____

District _____ School _____

Teacher _____ Grade _____ Sex _____

Product (Title and/or Brief Description) _____

_____

Number of Weeks Student(s) worked on Product _____

FACTORS	RATING*	NOT APPLICABLE
1. Early Statement of Purpose	_____	_____
2. Problems Focusing	_____	_____
3. Level of Resources	_____	_____
4. Diversity of Resources	_____	_____
5. Appropriateness of Resources	_____	_____
6. Logic, Sequence, and Transition	_____	_____
7. Action Orientation	_____	_____
8. Audience	_____	_____
9. Overall Assessment	_____	_____
A. Originality of the Idea	_____	_____
B. Achieved Objectives Stated in Plan	_____	
C. Advanced Familiarity with Subject	_____	
D. Quality Beyond Age/Grade Level	_____	
E. Care, Attention to Detail, etc.	_____	
F. Time, Effort, Energy	_____	
G. Original Contribution	_____	

Comments:

Person Completing This Form _____

*Rating Scales: Factors 1-8

5 - To a great extent
3 - Somewhat
1 - To a limited extent

Factor 9A-9G

5 = Outstanding
4 = Above Average
3 = Average
2 = Below Average
1 = Poor

STUDENT PRODUCT ASSESSMENT FORM

Joseph S. Renzulli
Sally M. Reis

1. EARLY STATEMENT OF PURPOSE

Is the purpose (theme, thesis, research question) readily apparent in the early stages of the student's product? In other words, did the student define the topic or problem in such a manner that a clear undertanding about the nature of the product emerges shortly after a review of the material?

For example, in a research project dealing with skunks of northwestern Connecticut completed by a first grade student, the overall purpose and scope of the product are readily apparent after reading the introductory paragraphs.

5	4	3	2	1	NA
To a great extent		Somewhat		To a limited extent	

2. PROBLEM FOCUSING

Did the student focus or clearly define the topic so that it represents a relatively specific problem within a larger area of study?

For example, a study of "Drama in Elizabethan England" would be more focused than "A Study of Drama."

5	4	3	2	1	NA
To a great extent		Somewhat		To a limited extent	

3. LEVEL OF RESOURCES

Is there evidence that the student used resource materials or equipment that are more advanced, technical, or complex than materials ordinarily used by students at this age/grade level?

For example, a sixth grade student utilizes a nearby university library to locate information about the history of clowns in the twelfth through sixteenth century in the major European countries.

5	4	3	2	1	NA
To a great extent		Somewhat		To a limited extent	

4. DIVERSITY OF RESOURCES

Has the student made an effort to use several different types of resource materials in the development of the product? Has the student used any of the following information sources in addition to the standard use of encyclopedias: textbooks, record/statistic books, biographics, how-to-do-it books, periodicals, films and filmstrips, letters, phone calls, personal interviews, surveys or polls, catalogs and/or others?

For example, a fourth grade student interested in the weapons and vehicles used in World War II reads several adult-level books on this subject which included biographies, autobiographies, periodicals, and record books. He also conducted oral history interviews with local veterans of World War II, previewed films and filmstrips about the period and collected letters from elderly citizens sent to them from their sons stationed overseas.

5	4	3	2	1	NA
To a great extent		Somewhat		To a limited extent	

5. APPROPRIATENESS OF RESOURCES

Did the student select appropriate reference materials, resource persons, or equipment for the topic or area of study?

For example, a student who is interested in why so much food is thrown away in the school cafeteria had to contact state officials to learn about state requirements and regulations which govern what must and can be served in public school cafeterias. With the aid of her teacher, she also had to locate resource books on how to design, conduct and analyze a survey.

5	4	3	2	1	NA
To a great extent		Somewhat		To a limited extent	

6. LOGIC, SEQUENCE, AND TRANSITION

Does the product reflect a logical sequence of steps or events that ordinarily would be followed when carrying out an investigation in this area of study? Are the ideas presented clearly and logically and is there a smooth transition from one idea or subtopic to another?

For example, a student decided to investigate whether or not a section of his city needs a new fire station with a salaried staff rather than the present volunteer staff. First the student needed to research different methods of investigative reporting such as appropriate interview skills. Next the student conducted interviews with both salaried and volunteer fire station staff. He then needed to learn about methods of survey design and reporting in order to analyze local resident opposition or support for the new fire station. After other logical steps in his research were completed, his accumulated findings led him to interviews with the Mayor and the Board of Safety in the city and then to several construction companies that specialized in bids on such buildings. His final product was an editorial in the local newspaper which reflected his research and conclusions.

5	4	3	2	1	NA
To a great extent		Somewhat		To a limited extent	

7. ACTION ORIENTATION

Is it clear that the major goal of this study was for purposes *other* than merely reporting on or reproducing existing information, ideas, or knowledge? In other words, the student's purpose is clearly directed toward some kind of action (e.g., teaching ways to improve bicycle safety, presenting a lecture on salt pond life); some type of literary or artistic product (e.g., poem, painting, costume design); a scientific device or research study (e.g., building a robot, measuring plant growth as a function of controlled heat, light and moisture); or some type of leadership or managerial endeavor (e.g., editing a newspaper, producing/directing a movie).

For example, a student decides to study the history of his city. After an extensive investigation, the student realizes that other history books have been written about the city. He finds, instead, that no one has ever isolated specific spots of historical significance in the city which are easily located and accessible. He begins this task and decides to focus his research to produce an original historical walking tour of the city.

5	4	3	2	1	NA
To a great extent		Somewhat		To a limited extent	

8. AUDIENCE

Is an appropriate audience specified or readily apparent in the product or management plan?

For example, the student who researched the history of his city to produce an original walking tour presents his tour to the city council and the mayor. They, in turn, adopt it as the official walking tour of the city. It is reproduced in the city newspaper and distributed by the local historical society, library and given out to registered guests in the city's hotels and motels.

5	4	3	2	1	NA
To a great extent		Somewhat		To a limited extent	

9. OVERALL ASSESSMENT

Considering the product as a whole, provide a general rating for each of the following factors in the space provided to the right of the item:

SCALE

5 = Outstanding
4 = Above Average
3 = Average
2 = Below Average
1 = Poor

A. Originality of the idea. ____

B. Achieved objectives stated in plan. ____

C. Reflects advanced familiarity (for age) with the subject matter. ____

D. Reflects a level of quality beyond what is normally expected of a student of this age and grade. ____

E. Reflects care, attention to detail, and overall pride on the part of the student. ____

F. Reflects a commitment of time, effort and energy. ____

G. Reflects an original contribution for a youngster of this age/grade level. ____